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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/710,574	07/21/2004	Igor Touzov		4573

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EXAMINER
GARBER, CHARLES D

ART UNIT	PAPER NUMBER
2856	

DATE MAILED: 11/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/710,574	TOUZOV, IGOR	
	Examiner	Art Unit	
	Charles D. Garber	2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 July 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *07/21/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

In accordance with 37 CFR 1.105 Examiner requires the submission, from individuals identified under § 1.56(c), or any assignee, such information as may be reasonably necessary to properly examine or treat the matter. This includes a copy of any non-patent Literature that was used in the invention process, such as by designing around or providing a solution to accomplish an invention result.

Claim Objections

Claims 1 and 2 are objected to because of the following informalities: MPEP 608.01(m) states "Each claim begins with a capital letter and ends with a period. Periods may not be used elsewhere in the claims except for abbreviations." Appropriate correction is required.

Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

The term "automatically defined characteristics specific to the subject" in claim 1 has no antecedent basis in the specification.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, the claim recites "A method of nondestructive structural and functional integrity monitoring of a subject that do apply any type of energy to the said subject". Examiner considers one having ordinary skill would not understand how a method might apply energy. A source of some kind capable of applying energy would be required to apply energy.

The claim then recites "examples of such energy are electromagnetic waves, voltages, currents, deformations, acoustic waves, temperature, thermal waves." Examiner does not consider one having ordinary skill in the art would understand if these examples are simply related to the energy that may or may not be applied to the subject or are somehow related to the "physical properties" that are "measured" by the "sensor(s)" in the subsequent claim language.

In addition, the term "Wherein term functional integrity monitoring also stands for malfunction detection and prediction" is confusing. Examiner does not consider one having ordinary skill in the art would understand if Applicant is simply redefining terms or is making a positive limitation that the method may detect or predict malfunctions or whether these malfunctions are structural.

Also, Examiner does not consider one having ordinary skill in the art would understand how functional integrity differs from structural integrity as is implied by the claim language but unaddressed in the Applicant's specification.

Finally, a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 1 recites the broad recitation “any energy”, and the claim also recites “such energy are electromagnetic waves, voltages, currents, deformations, acoustic waves, temperature, thermal waves” which is the narrower statement of the range/limitation.

For purposes of further examination, Examiner will only consider the portion of the claim reciting “A method of nondestructive structural…integrity monitoring of a subject…[t]he method only uses information obtained through a set of mounted sensor(s) that measure physical properties of said subject, wherein information from sensor(s) is analyzed by automatic means to determine presence of…characteristics specific to the subject” for examination on the merits.

Claims 2-11 depending from indefinite claim 1 are indefinite for the same reason.

As for claim 2, Examiner does not consider one having ordinary skill in the art would understand how a plurality of sensors could also be one sensor. A plurality is always more than one by definition. Examiner is unable to examine this claim on the merits

Claims 3, 4, 10 and 11 depending from indefinite claim 2 are indefinite for the same reason.

As for claim 8, Examiner does not consider one having ordinary skill in the art would understand how something that is remote could be in direct proximity. These terms appear to be mutually exclusive. Examiner is unable to examine this claim on the merits.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-5, 10 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Sundaresan et al. (US Patent 6,399,939).

Regarding claim 1, Sundaresan discloses a "sensor array for nondestructively monitoring a structure to detect a critical event" (abstract) related to "small damage" (column 1 lines 35-40) where the structure may be contained on "military helicopters, missiles, tanks, aircraft and other static or dynamic structures".

The method of Sundaresan's device uses only information obtained through a set of mounted sensors 14 that measure acoustic waves in the structure which is a physical properties of the structure. CPU 30 that "assembles the processed information sent by the sensor nodes 14, and assesses any damage growth that may be occurring in the structure" (column 4 lines 37-39) may be considered to be analyzing information from sensor(s) by automatic means to determine presence of...characteristics specific to the subject as in the instant invention.

As for claim 3, Sundaresan discloses the sensors may be fabricated from fibers or ribbons embedded "in layered composites" (column 5 lines 1-28) which is considered to be built-in.

As for claim 4, Sundaresan discloses "The plurality of discrete sensor nodes may further be divided into discrete subgroups, termed unit cells, each located at a different structural location. For example, a subgroup could be part of each rotor blade of a helicopter or different armor panels of a tank to provide a degree of sensing the location of the structural event in a specific element of the structure." Sundaresan refers to the sensor arrays also as a "sensor network".

As for claim 5, Sundaresan discloses the device will "detect damage to the structure by measuring AE waves generated by cracks in the material or breakage of fibers" and may "include a threshold detector for detecting an output exceeding a predetermined threshold level and providing an alarm signal when the output exceeds the predetermined threshold level". Cracking sounds large enough to trigger an alarm may be considered unusual usage events or patterns as in the instant invention.

As for claims 10 and 11, Sundaresan in figure 4 shows power supplied through the sensor bus that forms the network. As the device is intended to be used on tanks and airplanes the power source is considered to autonomous.

Claims 1, 6 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Bassim et al. (US Patent 4,609,994).

Bassim discloses "apparatus suitable for continuous monitoring of acoustic emission, and more particularly, to apparatus suitable for continuous, on-line, long-term monitoring of acoustic emission from large structures, such as pipelines, to detect incipient failure". Figure 1 shows plural sensors 10 communicating with central control unit 11. The communication Bassim further discloses "Communications means 12 may be [by]...telephone lines and associated interfaces."

Claims 1 and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Giurgiutiu (US Patent Application 2003/0009300).

Giurgiutiu discloses "In-situ structural health monitoring, diagnostics and prognostics system utilizing thin piezoelectric sensors"

"FIG. 12 provides an overview of an embodiment of the present invention. System 30 includes one or more structures 32 having one or more transducer arrays disposed thereon ...These components communicate with a personal computer 38 through an ultra-fast data acquisition module 40. Computer 38 also acquires measurement data from the transducer array through data acquisition module 40."

Giurgiutiu further discloses "By determining and recording the location and time of damage events, a record may be compiled to predict the structure's remaining operative life."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles D. Garber whose telephone number is (571) 272-2194. The examiner can normally be reached on 6:30 a.m. to 3:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cdg

CHARLES GARBER
PRIMARY EXAMINER